Complete Summary

GUIDELINE TITLE

Guideline on the management of anticoagulation and antiplatelet therapy for endoscopic procedures.

BIBLIOGRAPHIC SOURCE(S)

Eisen GM, Baron TH, Dominitz JA, Faigel DO, Goldstein JL, Johanson JF, Mallery JS, Raddawi HM, Vargo JJ 2nd, Waring JP, Fanelli RD, Wheeler-Harbough J. Guideline on the management of anticoagulation and antiplatelet therapy for endoscopic procedures. Gastrointest Endosc 2002 Jun;55(7):775-9. [29 references]

GUIDELINE STATUS

This is the current release of the guideline.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Diseases or conditions requiring gastrointestinal endoscopy in patients with concomitant cardiovascular conditions who are on antiplatelet therapy

GUIDELINE CATEGORY

Evaluation
Management
Prevention
Risk Assessment

CLINICAL SPECIALTY

Gastroenterology

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

- To address the management of patients undergoing endoscopic procedures who are on either anticoagulation therapy or aspirin or other nonsteroidal anti-inflammatory drugs (NSAIDs)
- To discuss the endoscopic management of acute gastrointestinal bleeding in therapeutically anticoagulated patients
- To consider the risk of bleeding related to endoscopic interventions
- To discuss the risk of thromboembolic events associated with interrupting anticoagulation therapy
- To propose management schemes for patients on long-term anticoagulation therapy
- To review the risk of bleeding related to the use of aspirin or other NSAIDs in the periendoscopic period and to provide recommendations for management

TARGET POPULATION

Patients undergoing endoscopic procedures who are on either anticoagulation therapy or aspirin or other nonsteroidal anti-inflammatory drugs (NSAIDs)

INTERVENTIONS AND PRACTICES CONSIDERED

Evaluation/Management

1. Monitoring of international normalized ratio (INR)
2. Reversal of anticoagulation based on condition and procedure risks for acute gastrointestinal hemorrhage in anticoagulated patients
    - Fresh frozen plasma
    - Vitamin K
3. Adjustment, continuation, or discontinuation of anticoagulation and antiplatelet therapy based on condition and procedure risks for elective endoscopic procedures
    - Heparin (including low molecular weight heparin [LMWH])
    - Warfarin
    - Aspirin
    - Nonsteroidal anti-inflammatory drugs (NSAIDs)
    - Platelet cell-surface adenosine diphosphate receptor (P2T receptor) antagonists (ticlopidine and clopidogrel)
    - Glycoprotein IIb/IIIa receptor antagonists (eptifibatide, abciximab, and tirofiban)

MAJOR OUTCOMES CONSIDERED

- Risk of bleeding related to endoscopic procedures

- Risk of thromboembolic complications in the absence of antithrombotic therapy

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Expert Consensus

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Guidelines for the appropriate practice of endoscopy are based on critical review of the available data and expert consensus.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Not stated

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not applicable

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Acute Gastrointestinal Hemorrhage in the Anticoagulated Patient

The decision to reverse anticoagulation, risking thromboembolic consequences, must be weighed against the risk of continued bleeding by maintaining the anticoagulated state. The degree of reversal of anticoagulation should be individualized. A supratherapeutic international normalized ratio (INR) may be treated with fresh frozen plasma. In one series, correction of the INR to 1.5 to 2.5 allowed successful endoscopic diagnosis and therapy at rates comparable with those achieved in nonanticoagulated patients. In contrast to the use of fresh frozen plasma, the administration of vitamin K has a delayed onset of action and prolongs the time required to reestablish therapeutic anticoagulation.

After appropriate endoscopic management, it is generally safe to reinstitute warfarin therapy within a few days. In a series of 27 patients who developed gastrointestinal bleeding while on warfarin, there was one episode of thromboembolism after withdrawal of anticoagulation for a median of 4 days and no subsequent bleeding after reinstitution of anticoagulation. When rapid resumption of anticoagulation is desired, intravenous heparin should be used.

Elective Endoscopic Procedures in the Anticoagulated Patient

General Considerations

When anticoagulation therapy is temporary, such as for deep venous thrombosis (DVT), elective procedures should be delayed, if possible, until anticoagulation is no longer indicated. The administration of vitamin K to reverse anticoagulation for elective procedures should be avoided because it delays therapeutic anticoagulation once anticoagulants are resumed.

1. Low-risk procedures: No adjustments in anticoagulation need be made irrespective of the underlying condition. However, elective procedures should be avoided when the level of anticoagulation is above the therapeutic range.
2. High-risk procedures in patients with low-risk conditions: Warfarin therapy should be discontinued 3 to 5 days before the scheduled procedure. The decision to obtain a preprocedure prothrombin time should be individualized.

3. High-risk procedures in patients with high-risk conditions: Warfarin therapy should be discontinued 3 to 5 days before the procedure. The decision to administer intravenous heparin once the INR falls below the therapeutic level should be individualized. Preliminary experience suggests there may be a role for monitored reduction in the INR without the use of heparin. Heparin, if used, should be discontinued 4 to 6 hours before the scheduled procedure and may be resumed 2 to 6 hours after the procedure. Warfarin therapy may generally be resumed the night of the procedure.

Heparin infusion and warfarin should overlap for a period of 4 to 5 days or until the INR has achieved the target therapeutic range for 2 to 3 days. However, the risk of major hemorrhage after sphincterotomy is between 10 and 15% if anticoagulation is reinstituted within 3 days of the sphincterotomy. Therefore, the benefits of immediate anticoagulation should be carefully weighed against the risks and would be advisable only in a situation where the risk of thromboembolic events significantly exceeds the risk of hemorrhage from sphincterotomy.

Aspirin and Other Nonsteroidal Anti-inflammatory Drugs (NSAIDs) in Patients Undergoing Elective Endoscopic Procedures

In the absence of a preexisting bleeding disorder, endoscopic procedures may be performed on patients taking aspirin and other NSAIDs in standard doses.

The data on other drugs affecting platelet function such as ticlopidine and dipyridamole are inadequate to make recommendations.

Table: Acute Gastrointestinal Hemorrhage in the Anticoagulated Patient

The decision to reverse anticoagulation and the extent of anticoagulation reversal should be individualized, weighing the risk of thromboembolism against the risk of continued bleeding.

A supratherapeutic INR may be corrected with infusion of fresh frozen plasma. Correction of the INR to 1.5 to 2.5 permits effective endoscopic diagnosis and therapy.

Reinstitution of anticoagulation should be individualized.

Recommendations for the management of anticoagulation, aspirin, and NSAID use in patients undergoing endoscopic procedures based on the relative risks of the procedure and underlying condition.

	Condition risk for thromboembolism	
Procedure risk	High	Low
High	Discontinue warfarin 3 to 5 days	Discontinue warfarin 3 to 5 days before procedure. Reinstitute warfarin after procedure.

<table>
<tr><td></td><td>before procedure. Consider heparin while INR is below therapeutic level.</td><td></td></tr>
<tr><td>Low</td><td colspan="2">No change in anticoagulation. Elective procedures should be delayed while INR is in supratherapeutic range.</td></tr>
<tr><td colspan="3">Procedure risk</td></tr>
<tr><td colspan="2">High-risk procedures</td><td>Low-risk procedures</td></tr>
<tr><td colspan="2">Polypectomy
Biliary sphincterotomy
Pneumatic or bougie dilation
Percutaneous endoscopic gastrostomy (PEG) placement
Endosonographic guided fine needle aspiration
Laser ablation and coagulation
Treatment of varices</td><td>Diagnostic
Esophagogastroduodenoscopy (EGD) ± biopsy
Flexible sigmoidoscopy ± biopsy
Colonoscopy ± biopsy
Endoscopic retrograde cholangiopancreatography (ERCP) without sphincterotomy
Biliary/pancreatic stent without endoscopic sphincterotomy
Endosonography without fine needle aspiration
Enteroscopy</td></tr>
<tr><td colspan="3">Condition risk</td></tr>
<tr><td colspan="2">High-risk conditions</td><td>Low-risk conditions</td></tr>
<tr><td colspan="2">Atrial fibrillation associated with valvular heart disease
Mechanical valve in the mitral position
Mechanical valve and prior thromboembolic event</td><td>Deep vein thrombosis
Uncomplicated or paroxysmal nonvalvular arterial fibrillation
Bioprosthetic valve
Mechanical valve in the aortic position</td></tr>
<tr><td colspan="3">Aspirin and other NSAID use</td></tr>
<tr><td colspan="3">In the absence of a preexisting bleeding disorder, endoscopic procedures may be performed in patients taking aspirin or other NSAIDs.</td></tr>
</table>

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

Guidelines for the appropriate practice of endoscopy are based on critical review of the available data and expert consensus.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate management of patients on anticoagulation or antiplatelet therapy during endoscopic procedures

POTENTIAL HARMS

- Acute gastrointestinal hemorrhage in the anticoagulated patient

  A history of prior gastrointestinal bleeding, but not a history of peptic ulcer disease alone, is associated with an increased risk of major gastrointestinal hemorrhage during warfarin therapy (30% at 3 years versus 5% in those with no prior bleeding history). The risk of gastrointestinal bleeding is also increased when the international normalized ratio (INR) is above the therapeutic range (see: "Condition Risks") and by concomitant aspirin use.

- Procedure risks

  Endoscopic procedures vary in their potential to produce significant or uncontrolled bleeding. Low-risk procedures include diagnostic esophagogastroduodenoscopy (EGD), flexible sigmoidoscopy and colonoscopy with or without biopsy, diagnostic endoscopic retrograde cholangiopancreatography (ERCP), and biliary stent insertion without endoscopic sphincterotomy, endosonography (EUS), and push enteroscopy. High-risk procedures include those associated with an increased risk of bleeding, such as colonoscopic polypectomy (1 to 2.5%), gastric polypectomy (4%), laser ablation and coagulation (less than 6%), endoscopic sphincterotomy (2.5 to 5%), and those procedures with the potential to produce bleeding that is inaccessible or uncontrollable by endoscopic means, such as pneumatic or bougie dilation of benign or malignant strictures, percutaneous endoscopic gastrostomy, and EUS-guided fine needle aspiration.

- Condition risks

  The probability of a thromboembolic complication depends on the preexisting condition prompting anticoagulation therapy. The risk of major embolism (causing death, residual neurologic deficit or peripheral ischemia requiring surgery) in the absence of antithrombotic therapy in patients with mechanical

valve heart prostheses is 4 per 100 patient-years. With antiplatelet therapy this risk is reduced to 2.2 per 100 patient-years, and with warfarin to 1 per 100 patient-years. The risk varies with the type and location of the valve. Mechanical valves in the mitral positron or mitral and aortic positions carry the greatest risk. Caged-ball or disk valves carry a greater risk than bi-leaflet or tilting dish valves. Concomitant atrial fibrillation and prior embolic events further increase the risk.

In nonanticoagulated patients with sustained atrial fibrillation unassociated with valvular disease, the risk of thromboembolic events is 5 to 7% annually. In patients with atrial fibrillation and concomitant dilated cardiomyopathy, valvular heart disease, or recent thromboembolic events, the risk is greater.

Conditions prompting anticoagulation therapy may be divided into low- and high-risk groups based on their associated risk of thromboembolic events. Low-risk conditions may include deep vein thrombosis (DVT), chronic or paroxysmal atrial fibrillation not associated with valvular disease, bioprosthetic valves, and mechanical valves in the aortic position. High-risk conditions may include atrial fibrillation associated with valvular heart disease, including the presence of a mechanical valve, mechanical valves in the mitral position, and mechanical valves in patients who have suffered a prior thromboembolic event. The absolute risk of an embolic event (major, minor, valve thrombosis) for patients with a low risk condition in whom anticoagulation is interrupted for 4 to 7 days may be estimated at 1 to 2 per 1000 patients.

- Risks of antiplatelet therapies

  Adenosine diphosphate (P2T) receptor antagonists include ticlopidine and the newer agent clopidogrel, which is associated with fewer side-effects than ticlopidine (neutropenia and thrombotic thrombocytopenia purpura). These agents are generally used in combination with aspirin to reduce the incidence of serious coronary events after stent placement, and are associated with an increased risk of bleeding complications, particularly the combination of ticlopidine and aspirin.

  Antiplatelet therapies directed against the IIb/IIIa receptor include eptifibatide, abciximab, and tirofiban. These drugs are designed to reduce the risk of acute ischemic complications in high-risk patients after coronary angioplasty. In phase III trials, treated patients had an approximately 2-fold increased risk of major bleeding, but no increase in cerebral hemorrhage or lethal bleeding.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- Controlled clinical studies would be beneficial to clarify some aspects of this statement and revision might be necessary as new data appear. Clinical consideration may justify a course of action at variance from these specific recommendations.

- The information in this guideline is intended only to provide general information and not as a definitive basis for diagnosis or treatment in any particular case. It is very important that individuals consult their doctors about specific conditions.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Staying Healthy

IOM DOMAIN

Effectiveness
Safety

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Eisen GM, Baron TH, Dominitz JA, Faigel DO, Goldstein JL, Johanson JF, Mallery JS, Raddawi HM, Vargo JJ 2nd, Waring JP, Fanelli RD, Wheeler-Harbough J. Guideline on the management of anticoagulation and antiplatelet therapy for endoscopic procedures. Gastrointest Endosc 2002 Jun;55(7):775-9. [29 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2002 Jun

GUIDELINE DEVELOPER(S)

American Society for Gastrointestinal Endoscopy - Medical Specialty Society

SOURCE(S) OF FUNDING

American Society for Gastrointestinal Endoscopy

GUIDELINE COMMITTEE

Standards of Practice Committee

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Committee Members: Glenn M. Eisen, MD (Chair); Todd H. Baron, MD; Jason A. Dominitz, MD; Douglas O. Faigel, MD; Jay L. Goldstein, MD; John F. Johanson, MD; J. Shawn Mallery, MD; Hareth M. Raddawi, MD; John J. Vargo II, MD; J. Patrick Waring, MD; Robert D. Fanelli (SAGES Representative); Jo Wheeler-Harbough (SGNA Representative)

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available from the American Society for Gastrointestinal Endoscopy Web site.

Print copies: Available from the American Society for Gastrointestinal Endoscopy, 1520 Kensington Road, Suite 202, Oak Brook, IL 60523.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on October 14, 2004. The information was verified by the guideline developer on November 5, 2004.

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